Setting an Accountability System: On the Role of Assessment in Seeking Equity

Michal Beller
Director-General of RAMA
The National Authority for Measurement and Evaluation in Education, Israel

Assessment and Equity
AEA-E Annual Conference 2006
9-11 November 2006, Naples, Italy
Outline

- **Introduction**
  - The proposed education reform in Israel
  - The establishment of RAMA
- **Accountability in Education**
  - A general Framework
  - Does it work?
  - Unintended negative effects
- **Achievement gaps in Israel**
  - As reflected by: Matriculation exams, Meitzav, PISA, TIMSS
  - Intervention programs for increasing equity
- **Updating the evaluation system in Israel**
  - Challenges and goals
  - External and internal assessments
- **Cycles of improvement – the next wave?**
International Comparisons as a Catalyst for Educational Reform

Israel Performance on PISA 2000(2)
National Task Force for the Advancement of Education

The National Educational Plan

Because every child deserves more

"If you want to reform the world - you must reform education"

Janusz Korczak

September 2003 – December 2004
Principles of the Plan

Decentralization: Accountability, Transparency
Strengthening early stages of education
Strengthening the schools: a warm, protective home
Goal-oriented, Results-based education
Strengthening public education
High-quality pedagogical continuum
Improving the teaching profession and its status
Responsibility for every child
Boosting achievement
Reducing gaps
Pooling of resources: streamlining, and realistic budgeting
An independent statutory unit - the National Authority for Measurement and Evaluation – RAMA - shall be established as the entity that leads and provides professional guidance to the education system with respect to measurement and evaluation.

RAMA will conduct periodic evaluations of the education system and evaluations in schools, and will publish its findings in an annual report submitted to the National Council for Education.

From the Dovrat National Task Force in Education (2004)
National Authority for Measurement and Evaluation in Education

Assessment for Learning
Accountability: A General Framework
Linn (2000) identified five “waves” of reforms that occurred during the last 50 years in the U.S.:

- **1950s**: tracking and selection
- **1960s**: program accountability
- **1970s**: minimum competency testing
- **1980s**: school and district accountability
- **1990s**: standards/test based accountability

- **2006**: …?? Cycles of improvement ???
Accountability Systems: Guiding Questions

- What do we expect students to know and be able to do?

- How satisfied are we that students have mastered the established content standards?

- How are teachers prepared to be effective in their classroom with all students?

- How and to what degree is the public informed about school results and the contributors to those results?

- How does society respond to the information it receives about the performance of schools?

Anderson, 2005
Accountability Should Provide Support for an Ongoing Process

Baker, 2005
Improving Student Learning

- Ultimately, accountability is **not only about measuring student learning but actually improving it**.

- Consequently, **genuine accountability involves supporting changes in teaching and schooling that can heighten the probability that students meet standards**.

- There are at least three major areas where attention is needed:
  - **Ensuring that teachers have the knowledge and skills they need to teach to the standards**.
  - **Providing school structures that support high quality teaching and learning**.
  - **Creating processes for school assessment that can evaluate students’ opportunities to learn and can leverage continuous change and improvement**.

Darling Hammond, 2004
Does External Accountability Affect Student Outcomes?
STUDENTS IN HIGH-ACCOUNTABILITY STATES AVERAGED SIGNIFICANTLY GREATER GAINS ON THE NAEP 8TH-GRADE MATH TEST THAN STUDENTS IN STATES WITH LITTLE OR NO STATE MEASURES TO IMPROVE STUDENT PERFORMANCE

Carnoy and Loeb (2002)
“There is a paradox inherent in our results. We find that accountability policies are more effective in states with greater local control. However, it is apparent that strong accountability policies are harder to institute in states with higher levels of local control. This may be for a number of reasons, including more citizen voice and thus stronger local accountability or less influence from the state to adopt a single accountability solution. In other words: for accountability policies to work best, they must be in place in conjunction with strong local voice. However states in which citizens can make their voices heard do not appear to implement as strong accountability policies.”

Loeb & Strunk (2005)
The Jury is Out

- Henry Braun (2004) conducted a study in which he used four different modes of analysis to evaluate the data on the connections between statewide high-stakes testing and student achievement.

- He concluded that the decisions that researchers made about methods of analysis largely determined which kinds of findings they reported:
  - analyzed in some ways, the evidence showed positive effects for high-stakes testing;
  - analyzed in other ways, there was no discernible effect.
What Works and When?

- Accountability systems work to the degree that they engage the knowledge, skill, and commitment of people who work in schools.

- The success of accountability policy depends on the development of practices of improvement—explicit strategies for developing and deploying knowledge and skill in classrooms and schools.

- The politics of accountability tend to lead to an underinvestment in knowledge and skill, and an overinvestment in testing and regulatory control.

- Correcting this distortion requires changing the relationship between policy and practice, particularly around the definition and development of leadership.

Elmore, 2006
Can We Measure Learning When Stakes are High?

- Information from test-based accountability (TBA) systems is likely to be more valid under some conditions than others.

- But scores on high-stakes tests will always provide an incomplete indicator of learning.

- Developers of TBA systems must create conditions that will promote valid information while informing users of the limitations of this information.

- Recent research suggests that TBA has some potential to promote positive outcomes, but efforts must be taken to reduce likelihood of negative consequences.

Hamilton, 2005
Unintended Negative Effects of External Testing

- Between-Subject Reallocation of time
- The Impact of Setting a Specific Target
- “Most Children are Left Behind...”
- Teaching to the Test; Test Inflation
- Narrowing the Curriculum
- Assessment is Only a Sample of the Curriculum
Achievement Gaps in Israel
Large Scale Assessments in Israel

- **Matriculation Exams** (‘Bagrut”) – end of high school
- **Meitzav** (Mother Language, Math, Science, English) – 5th and 8th grades (+2nd grade in Language)

**International Assessments:**
- **TIMSS** - Math and Science Study
- **PIRLS** - Reading Assessment
- **SITES** - Information Technology
  - (1997, 2006)
- **PISA** - Reading, Mathematical & Scientific Literacy
  - (2000/2, 2006) – 58 countries
Matriculation Certificate
Friedlander et al. (2004) conducted a study with:

- 78,000 high school students (85% and 15% Hebrew and Arabic speakers, respectively) who took at least one matriculation exam during the 90’s

- 49,000 of those students (63%) graduated with a Matriculation Certificate (65% and 54% Hebrew and Arabic speakers, respectively)
Quality of Matriculation Certificate by Sector

Based on Friedlander et al. (2004)

<table>
<thead>
<tr>
<th>Sector</th>
<th>High-Quality Portfolio 1</th>
<th>High-Quality Portfolio 2</th>
<th>Other Portfolios</th>
</tr>
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<tbody>
<tr>
<td>Hebrew S.: Western</td>
<td>26</td>
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<tr>
<td>Hebrew S.: Mixed</td>
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<tr>
<td>Arabic Speakers</td>
<td>7</td>
<td>37</td>
<td>56</td>
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</tbody>
</table>

Based on Friedlander et al. (2004)
Meitzav
National Assessments
Meitzav

Metizav - Growth and Effectiveness Measures for Schools (GEM) - introduced by the Ministry of Education in 2002/3

- A set of school level indicators, with a goal to enable principals to base their decisions on valid evidence
- Administered every second year to all 5th and 8th (+ 2nd grade for Mother Language)

The Meitzav School Report includes information on:

- Pedagogical Environment in the School (based on questionnaires and interviews)
- School Climate and Work Environment (based on questionnaires and interviews)
- Student Achievements –
  - Based on results from standardized national assessments, administered in both Hebrew and Arabic
  - Math, English, Mother Language (Hebrew/Arabic), and Science & Technology
Hebrew– Score Distribution by SES

Scores

5th Grade

8th Grade

High SES (1-3)  Medium SES (3-8)  Low SES (8-10)
English – Score Distribution by SES

Scores

5th Grade

8th Grade

High SES (1-3)
Medium SES (3-8)
Low SES (8-10)
Science & Tech. – Score Distribution by SES

Scores

5th Grade

Scores

8th Grade

Scores

High SES (1-3)  Medium SES (3-8)  Low SES (8-10)
Math – Score Distribution by SES

Scores

5th Grade

8th Grade

High SES (1-3)       Medium SES (3-8)       Low SES (8-10)

High SES (1-3)       Medium SES (3-8)       Low SES (8-10)
Achievement Gaps: Hebrew vs. Arabic Speakers (Std)

- English
- Science & Technology
- Math

5th Grade
- 2003/4
- 2005/6

8th Grade
- 2003/4
- 2005/6

Achievement Gaps
Introduction
RAMA
Accountability - General Framework
Does it Work
Negative Effects
Increasing Equity
Updating Evaluation System
Cycles of Improvement

English
Science & Technology
Math

5th Grade
- 2003/4
- 2005/6

8th Grade
- 2003/4
- 2005/6
English – Controlling for SES

5th Grade

8th Grade

High SES | Medium SES | Low SES
---|---|---
Hebrew Speakers

Arabic Speakers
Science – Controlling for SES

5th Grade

8th Grade

High SES | Medium SES | Low SES

Hebrew Speakers

Arabic Speakers

Science – Controlling for SES

5th Grade

8th Grade

High SES | Medium SES | Low SES

Hebrew Speakers

Arabic Speakers

Science – Controlling for SES

5th Grade

8th Grade

High SES | Medium SES | Low SES

Hebrew Speakers

Arabic Speakers

Science – Controlling for SES

5th Grade

8th Grade

High SES | Medium SES | Low SES

Hebrew Speakers

Arabic Speakers

Science – Controlling for SES

5th Grade

8th Grade

High SES | Medium SES | Low SES

Hebrew Speakers

Arabic Speakers

Science – Controlling for SES

5th Grade

8th Grade

High SES | Medium SES | Low SES

Hebrew Speakers

Arabic Speakers

Science – Controlling for SES

5th Grade

8th Grade

High SES | Medium SES | Low SES

Hebrew Speakers

Arabic Speakers
Gender Achievement Gaps (Std)

Hebrew Speakers

Boys

Girls

Arabic Speakers

Boys

Girls

English

Science & Technology

Math

Hebrew

-1.00 -0.80 -0.60 -0.40 -0.20 0.00 0.20 0.40 0.60 0.80 1.00

5th Grade 8th Grade

5th Grade 8th Grade

1.0 -0.8 -0.6 -0.4 -0.2 0.0 0.2 0.4 0.6 0.8 1.0

English

Science & Technology

Math

Hebrew

5th Grade 8th Grade

Boys

Girls

English

Science & Technology

Math

Hebrew

5th Grade 8th Grade

5th Grade 8th Grade

Boys

Girls

Hebrew

Science & Technology

Math

Hebrew

5th Grade 8th Grade

5th Grade 8th Grade

Boys

Girls

Hebrew

Science & Technology

Math

Hebrew

5th Grade 8th Grade

5th Grade 8th Grade

Boys

Girls

Hebrew

Science & Technology

Math

Hebrew

5th Grade 8th Grade

5th Grade 8th Grade

Boys

Girls

Hebrew

Science & Technology

Math

Hebrew

5th Grade 8th Grade

5th Grade 8th Grade
School Climate & Pedagogical Environment
School Climate: Students’ Perceptions

Students’ Reports: Elementary Schools

**Hebrew Speakers 5th Grade**
- Students are satisfied in school
- Violence incidents in school
- Good relationship with teachers

**Arabic Speakers 5th Grade**
- Students are satisfied in school
- Violence incidents in school
- Good relationship with teachers

Students’ Reports: Secondary Schools

**Hebrew Speakers 8th Grade**
- Students are satisfied in school
- Violence incidents in school
- Good relationship with teachers

**Arabic Speakers 8th Grade**
- Students are satisfied in school
- Violence incidents in school
- Good relationship with teachers
Attribution by Teachers of Reasons for Low Performance of Students

- **Student Low Ability**
- **Student Low Motivation**
- **Student Low SES**
- **School Malfunctioning**

**Groups:**
- H: Public
- H: Public-Reformed
- Arabs
- Druze
- Bedouin

<table>
<thead>
<tr>
<th>Group</th>
<th>Student Low Ability</th>
<th>Student Low Motivation</th>
<th>Student Low SES</th>
<th>School Malfunctioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>H: Public</td>
<td>58%</td>
<td>45%</td>
<td>21%</td>
<td>0%</td>
</tr>
<tr>
<td>H: Public-Reformed</td>
<td>56%</td>
<td>41%</td>
<td>22%</td>
<td>8%</td>
</tr>
<tr>
<td>Arabs</td>
<td>56%</td>
<td>42%</td>
<td>14%</td>
<td>6%</td>
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<tr>
<td>Druze</td>
<td>57%</td>
<td>37%</td>
<td>32%</td>
<td>18%</td>
</tr>
<tr>
<td>Bedouin</td>
<td>59%</td>
<td>41%</td>
<td>41%</td>
<td>14%</td>
</tr>
</tbody>
</table>
PISA Results
Israel’s Performance in PISA 2000 (2) by Sector

**OEC Average = 500**

- Hebrew Speaker
- Opinion Appreciation & Expression
- Math
- Achievement
- Science
- Info Extraction
- Reading
- Matriculation
- PISA
- School Climate
- Meitzav
- Timss
- Achievment Gaps
- Increasing Equity
- Negative Effects
- Updating Evaluation System
- Cycles of Improvement

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OECD Average = 500

<table>
<thead>
<tr>
<th>Sector</th>
<th>Hebrew Speaker</th>
<th>Opinion Appreciation &amp; Expression</th>
<th>Math</th>
<th>Achievement</th>
<th>Science</th>
<th>Info Extraction</th>
<th>Reading</th>
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<tr>
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<td>449</td>
<td>433</td>
<td>471</td>
<td>465</td>
<td>452</td>
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<tr>
<td>Israel Average</td>
<td>434</td>
<td>467</td>
<td>433</td>
<td>392</td>
<td>467</td>
<td>431</td>
<td>378</td>
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<tr>
<td>Arabic Speaker</td>
<td>374</td>
<td>392</td>
<td>344</td>
<td>344</td>
<td>387</td>
<td>431</td>
<td>387</td>
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<tr>
<td>OECD Average</td>
<td>378</td>
<td>350</td>
<td>400</td>
<td>392</td>
<td>392</td>
<td>392</td>
<td>392</td>
</tr>
</tbody>
</table>
Israel’s performance on PISA 2000(2) Reading by Sector and Level

- **OECD**
  - Below Level 1: 6%
  - Level 1: 11.9%
  - Level 2: 21.7%
  - Level 3: 28.7%
  - Level 4: 22.3%
  - Level 5: 9.5%

- **Arabic Speakers**
  - Below Level 1: 30.5%
  - Level 1: 31.7%
  - Level 2: 26.2%
  - Level 3: 10.1%
  - Level 4: 0%
  - Level 5: 1.5%

- **Hebrew Speakers**
  - Below Level 1: 12.6%
  - Level 1: 15.2%
  - Level 2: 24.7%
  - Level 3: 25.9%
  - Level 4: 17.8%
  - Level 5: 4.2%

*Note: The chart represents the percentage of students at different levels of reading proficiency.*
TIMSS Results
TIMSS – Math

2003 vs. 1999, Israel vs. International Performance

Based on Zuzovsky, 2005
TIMSS – Science

2003 vs. 1999, Israel vs. International Performance

Based on Zuzovsky, 2005
# Achievement Gap on TIMSS Reduced

## Improvement (Std) on TIMSS - 2003 vs. 1999

<table>
<thead>
<tr>
<th></th>
<th>Hebrew Speakers</th>
<th>Arabic Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Math</strong></td>
<td>0.18</td>
<td>0.80</td>
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<tr>
<td><strong>Science</strong></td>
<td>0.15</td>
<td>0.80</td>
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</table>

## Gaps (Std) on TIMSS - Hebrew vs. Arabic Speakers

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2003</th>
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</thead>
<tbody>
<tr>
<td><strong>Math</strong></td>
<td>1.0</td>
<td>0.50</td>
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<tr>
<td><strong>Science</strong></td>
<td>0.9</td>
<td>0.40</td>
</tr>
</tbody>
</table>
Increasing Equity: Intervention Programs Set by the MoE
Intervention Programs for Reducing Achievement Gaps

- Implementing a new budgeting system based on differential standard per pupil (the Shoshani Report)

- Promoting basic skills in the native language, mathematics and English

- Operating leading programs to increase the number of pupils entitled to matriculation certificates

- Ometz Program (Hebrew acronym for "I believe in myself, I’m ready to make the effort, I expect to achieve") aimed at underachievers from grade 10 to prevent them from dropping out of school

- Absorption of new immigrants

  - Five-year program for the Arab and Druze sectors (second cycle)

  - ...
Fostering an atmosphere of safety in educational facilities, and minimizing violence and drug/alcohol abuse, through a wide range of varied programs:

- **Life Skills** - program for dealing with problems of violence and drug/alcohol abuse, directed by homeroom teachers and school counselors
- **ASA Project (Violence-Drugs-Alcohol)** for teenagers, operating in nine local authorities
- Reinforcing the principals’ obligation and authority to impose order and discipline
- Involving kindergarten and primary school counselors in programs for preventing violence
- Operating an emergency hotline for issues of violence
- **Interpersonal communication** - curriculum dealing with good manners, debating culture and mediation skills (for the primary school)
- "The School as an Educational Venue" - setting a "standard of quality" with respect to the social atmosphere at the school
- Forming treatment groups for violent pupils
- **Road Safety and Caution**: a curriculum for kindergarten and grade 1 pupils - allocating one weekly hour to this topic in 1,200 kindergartens and 2,500 grade 1 classes
- **Youth movements** - encouraging pupils to join
- **Incorporating environmental studies** into the core curriculum, and operating additional programs for promoting environmental awareness and responsibility
Updating the Israeli Evaluation System
Unintended Negative Effects of Meitzav

- Between-subjects reallocation of time
- Teaching to the test
  - Narrowing of the curriculum
  - Excessive test preparation
  - Score inflation
- Gaming the system (incl. cheating)
- Excluding weak students
Updating the Israeli Evaluation System

The main goals of the recent update:

- Implement a culture of “assessment for learning”
- Mitigate the threats of external exams (including gaming the system)
- Effective integration of internal and external evaluation
- Decentralization of the evaluation process along with the use of centrally designed rigorous tools
- Empowerment of teachers and principals
- Professional design of assessments and scoring (including equating, alignment to standards and more)
Use of Multiple Indicators

Internal
- Formative Assessments, Assignment Data, "Off-the-shelf" Assessments
- Internal admin. of external tests

External
- Matriculation exams, Meitzav

Schools & pupils are being examined

Sample-based Assessments
- Like NAEP & International exams!
## Cycles of Internal & External Meitzav

<table>
<thead>
<tr>
<th>Cluster of Schools</th>
<th>Subject</th>
<th>2006/7</th>
<th>2007/8</th>
<th>2008/9</th>
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<tr>
<td><strong>A</strong></td>
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<td>Internal</td>
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Goals of the Internal Meitzav

- Reduce the frequency of external assessments (from every 2 years to every 4 years), and introduce internal assessments in between

- Provide principals with a way to annually ensure that teaching is aligned with expectations and standards for each subject matter

- Annual follow up of changes in achievement and school climate relative to national norms

- Enable teachers to internally use professional assessment tools to plan and monitor learning

- Provide feedback at the student level (hence increase the motivation of students to respond)

- Implement a culture of “assessment for learning” and focus attention on aspects not measured by standardized tests
Further Challenges

Cycles of Improvement
It Is All About Teacher Quality…

- The most likely way to improve student performance is to improve the quality of teachers

- Rivkin, Hanushek and Kaine (2005) estimate that the differences in annual achievement growth between an average and a good teacher are large.

- Within one academic year, a good teacher can move a typical student up at least four percentiles in the overall distribution (equal to a change of 0.12 standard deviations of student achievement).

- The difficulty, is that hiring good teachers is not easily done. Teaching ability is not closely related to training or experience. Moreover, common salary systems do not target particularly high quality teachers

- From a policy viewpoint the primary objective should be improving the overall quality of the teaching force

Hanushek, 2005
Defining the “Cycle of Improvement”

Hewlett’s Education Program uses the term “cycle of improvement” to:

- characterize how instruction has to be adapted to meet the differing needs of students if the goal of standards-based education reform is to be achieved.

- help teachers improve their practice by learning from experience and evidence.

http://www.cpre.org/News/CenterSummaryFinal.pdf
The Cycle Requirements

- Purpose of assessment is to inform decisions about how to respond pedagogically to students’ current state in ways to advance them; beyond simply grading students’ current performance.

- The cycle requires a teacher to:
  1. gather data about what students have learned during instruction;
  2. interpret those data as evidence for deciding whether they are progressing toward meeting standards or the goals of the particular course or subject, and, if not, what kinds of misunderstandings or errors are occurring;
  3. determine how to respond instructionally to meet each student’s problems;
  4. carry out further instruction based on these determinations; and
  5. continue the cycle by gathering data and evidence about the results of step 4.

Implementing the Cycle

Challenges

- Work is at an early stage.
- Serious barriers to widespread implementation of the cycle, and
- Lack of attention to the instructional options issue.

Requires the following work:

- Further development and research to improve the tools and their use and to evaluate relative effectiveness of various approaches identified;
- Building understanding and support for placing evidence of student progress at the core of efforts to improve instruction;
- Basic work on how students’ knowledge and skill in specific core subjects develop over time with instruction; and
- Further examination of the ways assessment-based accountability and other policy pressures interact with the time, flexibility, and trust teachers need to adapt their practice to requirements of the cycle.
Trust and Shared Responsibility

- Students
- Teachers
- Parents
- Politicians
- Administrators
- Local Education Units

External Stakeholders

Active Partners

Wider Community
Assessment for Learning

Alignment with the goals of the educational system

"Measurement"

"Learning"

Ongoing feedback from the field

Summative
Formative
Internal
External

Accountability, Assessment & Equity
Introduction
RAMA
Accountability - General Framework
Does it Work
Negative Effects
Achievement Gaps
Increasing Equity
Updating Evaluation System
Cycles of Improvement
National Authority for Measurement and Evaluation in Education
© 2006 # 63
Thank You

mbeller.rama@education.gov.il

Comments ? Questions?